

**Biology Department
Publications
2008**

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Agarwal, R., Burley, S. K., **Swaminathan, S.** Structure of human dual specificity protein phosphatase 23, VH2, enzyme-substrate/product complex. *Journal of Biological Chemistry* 283(14): 8946-8953 (April, 2008).

Agarwal, R. and **Swaminathan, S.** SNAP-25 substrate peptide (residues 180-183) binds to but bypasses cleavage by catalytically active *Clostridium botulinum* neurotoxin E. *Journal of Biological Chemistry* 283(38): 25944-25951 (September, 2008).

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Hu, M., Zhang, Y.-B., Qian, L., Brinas, R. P., Kuznetsova, L., and **Hainfeld, J. F.** Three-dimensional structure of human chromatin accessibility complex hCHRAC by electron microscopy. *Journal of Structural Biology* 164(3): 263-269 (December, 2008).

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Kim, K.-H., Jung, E. J., Im, H., **van der Lelie, D.**, and Kim, E. E. Expression, purification, and crystallization and preliminary X-ray crystallographic analysis of CnrX from *Cupriavidus metallidurans* CH34. *Journal of Microbiology and Biotechnology* 18(1): 43-47 (January, 2008).

Kim, S. K., Reddy, S. K., Nelson, B. C., **Robinson, H.**, Reddy P. T., and Ladner, J. E. A comparative biochemical and structural analysis of the intracellular chorismate mutase (Rv0948c) from *Mycobacterium tuberculosis* H₃₇R_v and the secreted chorismate mutase (y2828) from *Yersinia pestis*. *FEBS Journal* 275(19): 4824-4835 (October, 2008).

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Moreels, D., Crosson, G., Garafola, C., Monteleone, D., **Taghavi, S.**, Fitts, J. P., and **van der Lelie, D.** Microbial community dynamics in uranium contaminated subsurface sediments under biostimulated conditions with high nitrate and nickel pressure. *Environmental Science and Pollution Research International* 15: 481-491 (September, 2008).

Mulligan, E. A. and **Dunn, J. J.** Cloning, purification and initial characterization of *E. coli* McrA, a putative 5-methylcytosine-specific nuclease. *Protein Expression and Purification* 62(1): 98-103 (November, 2008).

Nykypanchuk, D., Maye, M. M., **van der Lelie, D.**, and Gang, O. DNA-guided crystallization of colloidal nanoparticles. *Nature* 451: 549-552 (January, 2008). Cover: The idea that DNA base pairing could direct the crystallization of useful materials is a tempting one for nanotechnologists. Now - over ten years after it was first shown that DNA attached to nanoparticles can influence their assembly - two groups have put this concept into practice. Park *et al.* demonstrate that the DNA molecules attached to gold nanoparticles, and DNA molecules used to link them, can be selected to ensure that the nanoparticles self-assemble into either face-centred cubic or body-centred cubic crystals. The cover graphic, by Cole Krumbholz, is a close-up of the latter. Nykypanchuk *et al.* identify the requirements for DNA design and the crystallization conditions that allow the reversible formation of body-centred cubic crystals, with nanoparticles occupying just a few percent of a lattice volume. As discussed in News & Views, these developments might make it possible to create ordered and tunable 3D nanoscale architectures relevant for photonic and magnetic applications, biomedical sensing, and information or energy storage. *BNL Research Cited as a 2008 Favorite by Editors of Nature: Tuesday, January 6, 2009 – BNL Home Page: A Brookhaven nanotechnology paper featured in Nature magazine has been selected as one of the editors' favorites this year. "DNA-guided crystallization of colloidal nanoparticles" was co-authored by Dmytro Nykypanchuk and Oleg Gang of Brookhaven's Center for Functional Nanomaterials, Matthew Maye, formerly of CFN and now at Syracuse University, and Niels van der Lelie of the Biology Department. It appeared in Nature on January 31, 2008. The paper put a 10-year-old theory into practice by showing that DNA attached to gold nanoparticles can be selected to self-assemble as nanocrystalline structures (as probed at the NSLS) of the type that may serve as the optical and electronic materials of the future.*

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